Taiwan Journal of Ophthalmology 5 (2015) 147–148

Contents lists available at ScienceDirect

Taiwan Journal of Ophthalmology

journal homepage: www.e-tjo.com

Editorial

Choose the right treatment for the right patients

Age-related macular degeneration (AMD) is one of the major causes of adult visual loss. During the past decade, the use of anti-vascular endothelial growth factor (anti-VEGF) agents for the treatment of neovascular eye disease has significantly changed the standard of care in retinal medicine and ophthalmology. Intravitreal injection of anti-VEGF drugs has since been widely employed clinically to mitigate disease progression and improve the visual outcomes of affected patients.

Although evidence-based data support the use of anti-VEGF pharmacotherapy in neovascular AMD, not every patient responds well to treatment. The factors contributing to the non-response include genetic factors, presence of polypoidal choroidal vasculopathy, retinal angiomatous proliferation, presence of vitreoretinal interface anomalies, or mimics of wet AMD.[1–3] Some patients respond to treatment, but progress to disciform scarring, retinal pigment epithelial (RPE) tears, massive subretinal hemorrhage, geographic atrophy, or develop tachyphylaxis to anti-VEGF drugs.[4] While there is argument about the timing associated with the decision of a responder to accept treatment, it would be helpful for AMD patients if the efficacy of anti-VEGF could be determined as early as possible in their treatment, so that non-responders could begin other more appropriate therapy. Evidence showed that most diseases require long-term treatments to maintain the beneficial effects of the therapy, therefore, the treatment burden is substantial for both patients and doctors.[5–7] Hence, it is important to choose the appropriate therapy for an individual patient from the beginning.

Macular telangiectasia type 2 (Mac Tel 2) is an important mimics of wet AMD. In this issue of the *Taiwan Journal of Ophthalmology*, Wu[8] contributes a comprehensive review of Mac Tel 2. Mac Tel 2, also known as idiopathic perifoveal telangiectasia and juxtafoveolar retinal telangiectasis type 2A, is an enigmatic disease of unknown etiology that manifests both neurodegenerative and vasculopathic characteristics during the fifth or sixth decades of life. Clinical characteristics include minimally dilated parafoveal capillaries with loss of retinal transparency in the area involved, absence of lipid exudation, right-angled retinal venules, superficial retinal refractile deposits, hyperplasia of the RPE, foveal atrophy, and choroidal neovacularization (CNV). Optical coherent tomography (OCT) images typically demonstrate outer retinal abnormalities and the presence of intraretinal hyporeflective spaces that are usually not related with retinal thickening or fluorescein leakage. The typical fluorescein angiographic finding is a deep intraretinal hyperfluorescent staining in the temporal parafoveal area. Over time, this fluorescein hyperfluorescence involves the entire parafoveal area, but does not extend to the center of the fovea. Long-term prognosis for central vision is poor due to the development of CNV or macular atrophy. Its pathogenesis remains unclear, however, multimodality imaging with fluorescein angiography, spectral domain optical coherence tomography, adaptive optics, confocal blue reflectance, short-wave fundus autofluorescence, OCT angiography, and clinicopathological correlations implicate Müller cells. Currently there is no known treatment for this condition, unless in the presence of CNV. The eyes of these patients may benefit from anti-VEGF treatment.[9] It is important to choose the right treatment at the right stage of Mac Tel 2. Otherwise, inaction may increase the treatment-related risk and burden.

OCT is a non-invasive imaging modality that shows cross-sectional images of the retina, RPE, and choroid. The recently developed OCT angiography provides the opportunity to study retinal vasculature without the need for dye injection. OCT angiography offered an even better tool to investigate the anatomical changes associated with Mac Tel 2 and is expected to be a useful guide for treatment. This treatment demonstrates that the earliest vascular changes associated with Mac Tel 2 arise in the outer deep capillary plexus.[10,11] As the disease progresses, the vascular changes also involve the inner superficial plexus, albeit to a lesser extent than the changes seen in the outer plexus.[11] The vessels appear less densely packed, thinner, and in an abnormal arrangement. The normally avascular Henle's layer and the outer nuclear layers becomes the target of a vascular invasion. Anastomosis between plexi and dragging of vessels temporally are also observed by OCT angiography.[10] Patients with Mac Tel 2 could be monitored closely to catch the right time for intervention.

Several ocular factors had been reportedly related to AMD progress.[2,3] In this issue of the *Taiwan Journal of Ophthalmology*, Lai et al[12] report the relationship of distinct reduced subfoveal choroidal thickness (SFCT) and elongated axial length (AL) with late AMD. A total of 856 eyes of 486 patients (older than 65 years), including 400 eyes at various AMD stages and 456 eyes with no

Conflicts of interest: The author declares no conflicts of interest.

http://dx.doi.org/10.1016/j.tjo.2015.10.001

fundus lesions (Controls), were recruited in this case–control study. Their results showed that eyes with thinner SFCT and longer AL showed high odds ratios (ORs) for late AMD, and even higher ORs when both factors were simultaneously present. These findings illustrate the crucial pathophysiological role of these two important ocular factors and arouse our attention to patients with both characteristics, especially in Asian countries where the prevalence of myopia is disturbingly high. The impacts of these study results on treatment decision making deserve to be further clarified.

In conclusion, the advances in the diagnosis and management of macular disease have made amazing progress in the past decade. Although a variety of trials and studies showed the convincing effect of intravitreal pharmacotherapy by anti-VEGF, the optimal treatment regime remained controversial. Improper treatment caused waste of medical resources and increased treatment-related risk for the patients. Current evidence supports the value of individualized treatment for different individuals. We should always try to make the correct diagnosis and plan the treatment based on individual factors.

References

1. Lux A, Llacer H, Heussen F, et al. Non-responders to bevacizumab (Avastin) therapy of choroidal neovascular lesions. *Br J Ophthalmol*. 2007;91:1318–1322.
2. Krebs I, Glittenberg C, Ansari-Shahrezaei S, Hagen S, Steiner I, Binder S. Non-responders to treatment with antagonists of vascular endothelial growth factor in age-related macular degeneration. *Br J Ophthalmol*. 2013;97:1443–1446.
3. Suzuki M, Nagai N, Izumi-Nagai K, et al. Predictive factors for non-response to intravitreal ranibuzumab treatment in age-related macular degeneration. *Br J Ophthalmol*. 2014;98:1186–1191.
4. Schaal S, Kaplan H, Tezel T. Is there tachyphylaxis to intravitreal anti-vascular endothelial growth factor pharmacotherapy in age-related macular degeneration? *Ophthalmology*. 2008;115:2199–2205.
5. Comparison of Age-related Macular Degeneration Treatments Trials (CATT) Research Group, Martin DF, Maguire MG, Fine SL, et al. Ranibizumab and bevacizumab for treatment of neovascular age-related macular degeneration: two-year results. *Ophthalmology*. 2012;119:1388–1398.
6. IVAN Study Investigators, Chakravarthy U, Harding SP, Rogers CA, et al. Ranibizumab versus bevacizumab to treat neovascular age-related macular degeneration: one-year findings from the IVAN randomized trial. *Ophthalmology*. 2012;119:1399–1411.
7. Schmidt-Erfurth U, Kaiser PK, Korobelnik JF, et al. Intravitreal aflibercept injection for neovascular age-related macular degeneration: ninety-six-week results of the VIEW studies. *Ophthalmology*. 2014;121:193–201.
8. Wu L. When is macular edema not macular edema? An update on macular telangiectasia type 2. *Taiwan J Ophthalmol*. 2015;5:149–155.
9. Wu L, Evans T, Arevalo JF. Idiopathic macular telangiectasia type 2 (idiopathic juxtafoveolar retinal telangiectasis type 2A, Mac Tel 2). *Surv Ophthalmol*. 2013;58:536–559.
10. Thorell MR, Zhang Q, Huang Y, et al. Swept-source OCT angiography of macular telangiectasia type 2. *Ophthalmic Surg Lasers Imaging Retina*. 2014;45:369–380.
11. Spaide RF, Klancnik Jr JM, Cooney MJ. Retinal vascular layers in macular telangiectasia type 2 imaged by optical coherence tomographic angiography. *JAMA Ophthalmol*. 2015;133:66–73.
12. Wang CP, Lai CH, Huang JC, et al. Axial length and subfoveal choroidal thickness in individuals with age-related macular degeneration. *Taiwan J Ophthalmol*. 2015;5:169–176.

Shwu-Jiuan Sheu, MD*

Department of Ophthalmology, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan

Department of Ophthalmology, School of Medicine, National Yang-Ming University, Taipei, Taiwan

* Department of Ophthalmology, Kaohsiung Veterans General Hospital, Number 386, Dazhong 1st Road, Zuoying District, Kaohsiung City 81362, Taiwan.
E-mail address: sjiuansheu@gmail.com.

Available online 8 December 2015